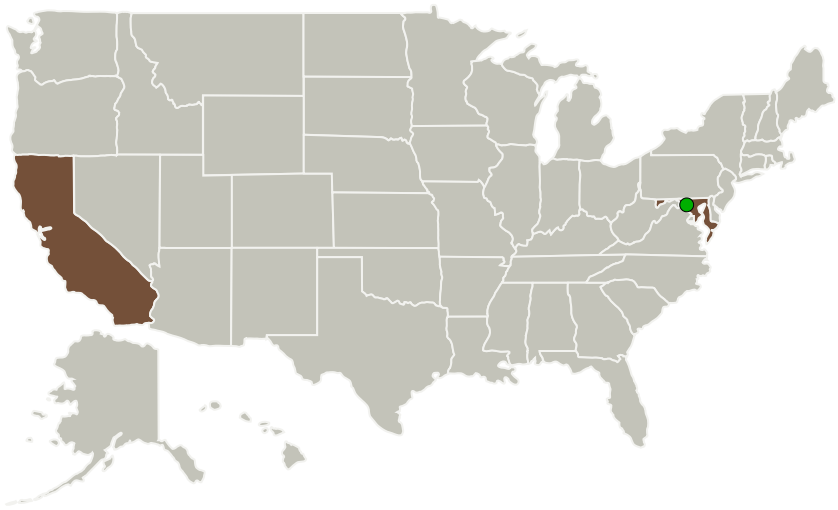
Long Term Ultrastable Laser System at 780 nm for Atomic Clocks, Phase I

Completed Technology Project (2017 - 2017)

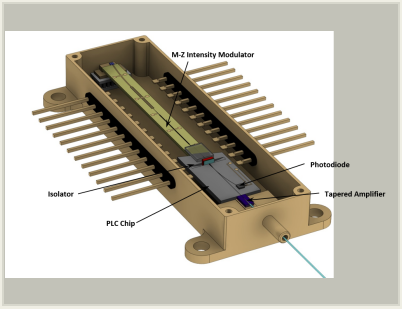
Project Introduction

Gener8 and AOSense team together to propose a novel new architecture for a low-phase noise, single-frequency electronically tunable laser at 780 nm. This laser concept has a demonstrated electronic tuning coefficient 2.37 GHz/Volt and will meet all the demanding requirements for atomic clock applications. The compact laser technology is based on previously developed hybrid integration technology that enables the direct optical coupling of active and passive waveguide chips. The integrated design proposed reduces system complexity, lowers cost and lends itself readily to array scaling. A rugged packaging solution is proposed to package the laser head in a volume of 3.0 cubic cm.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Gener8, Inc.	Lead Organization	Industry	Sunnyvale, California
Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland



Long Term Ultrastable Laser System at 780 nm for Atomic Clocks, Phase I Briefing Chart Image

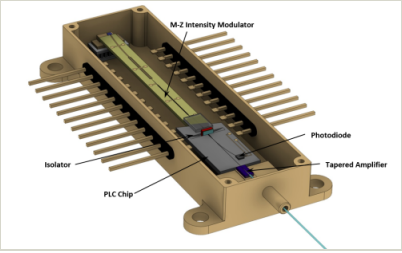
Table of Contents

Long Term Ultrastable Laser System at 780 nm for Atomic Clocks, Phase I

Completed Technology Project (2017 - 2017)

Primary U.S. Work Locations	
California	Maryland

Images



Briefing Chart Image
Long Term Ultrastable Laser System at 780 nm for Atomic Clocks, Phase I Briefing Chart Image
(https://techport.nasa.gov/image/127169)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Gener8, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

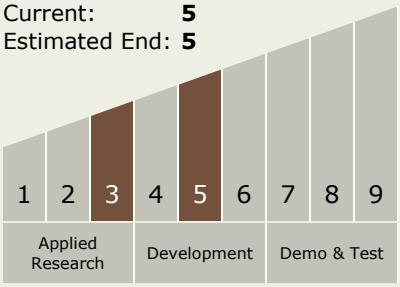
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
William Bischel

Technology Maturity (TRL)

Start: **3**
Current: **5**
Estimated End: **5**



Long Term Ultrastable Laser System at 780 nm for Atomic Clocks, Phase I

Completed Technology Project (2017 - 2017)

Technology Areas

Primary:

- TX05 Communications, Navigation, and Orbital Debris Tracking and Characterization Systems
  - TX05.4 Network Provided Position, Navigation, and Timing
    - TX05.4.1 Timekeeping and Time Distribution

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System